

FURUNO

OPERATOR'S MANUAL

NETWORK SOUNDER

MODEL ETR-30N

NAVnet



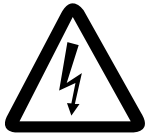
FURUNO ELECTRIC CO., LTD.
NISHINOMIYA, JAPAN



SAFETY INSTRUCTIONS



WARNING



ELECTRICAL SHOCK HAZARD
Do not open the equipment unless totally familiar with electrical circuits and service manual.

Only qualified personnel should work inside the equipment.

Turn off the power at the switchboard before beginning the installation.

Fire or electrical shock can result if the power is left on.

Do not install the equipment where it may get wet from rain or water splash.

Water in the equipment can result in fire, electrical shock or damage to the equipment.

Be sure no water leaks in at the transducer mounting location.

Water leakage can sink the vessel. Also, confirm that the transducer will not loosen by ship's vibration. The installer of the equipment is solely responsible for the proper installation of the equipment. FURUNO will assume no responsibility for any damage associated with improper installation.

Be sure that the power supply is compatible with the voltage rating of the equipment.

Connection of an incorrect power supply can cause fire or damage the equipment.

Do not disassemble or modify the equipment.

Electrical shock, damage to the equipment or injury may result.



WARNING

Install the transducer tank according to the installation instructions.

Failure to install the tank correctly may result in water leakage and damage to the ship's hull.

⚠ CAUTION



Ground the equipment to prevent mutual interference.

Observe the following compass safe distances to prevent interference to a magnetic compass:

	Standard compass	Steering compass
ETR-30N	1.7 m	1.1 m

Do not allow warm water or any liquid other than seawater or freshwater to contact the transducer.

Damage to the transducer may result.

Do not install the transducer where noise or air bubbles is present.

Performance will be affected.

⚠ CAUTION

The transducer cable must be handled carefully, following the guidelines below.

- Keep fuels and oils away from the cable.
- Locate the cable where it will not be damaged.
- The cable sheath is made of chlorophrene or polychloride vinyl, which is easily damaged by plastic solvents such as toluene. Locate the cable well away from plastic solvents.

Use the correct fuse.

Use of a wrong fuse can cause serious damage to the equipment.

Be sure to enter transducer model correctly.

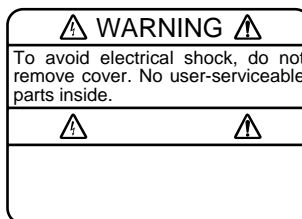
Incorrect setting may damage the transducer.

Do not enter transducer type manually if the transducer type is programmed into the equipment.

Damage to the transducer may result.

WARNING LABEL

A warning label is attached to the equipment. Do not remove the label. If the label is missing or illegible, contact a FURUNO agent or dealer about replacement.



Name: Warning Label (1)

Type: 86-003-1011-1

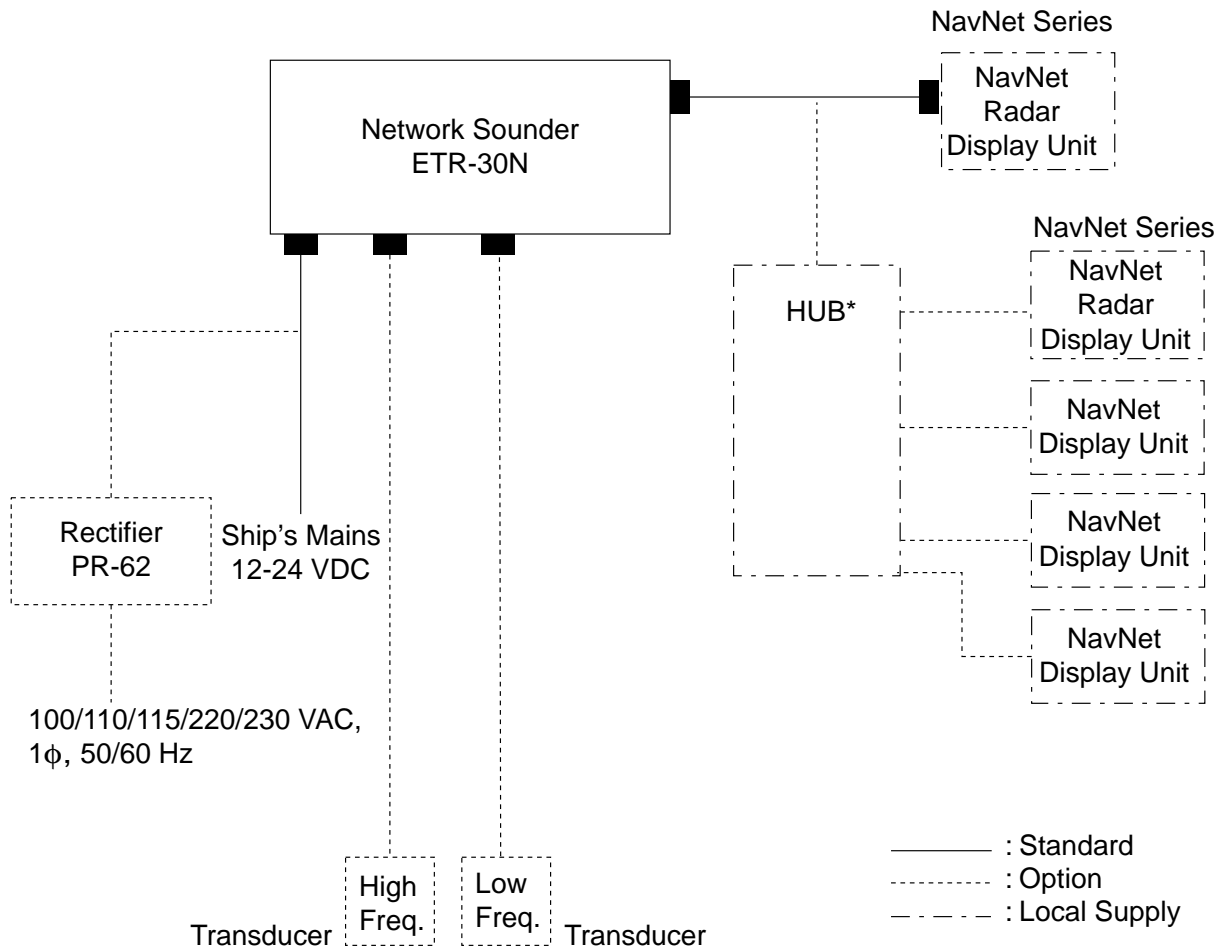
Code No.: 100-236-231

TABLE OF CONTENTS

SYSTEM CONFIGURATION	iv
EQUIPMENT LISTS	vi
1. MOUNTING	1
1.1 Network Sounder.....	1
1.2 Transducer.....	2
2. WIRING, SETUP	3
2.1 Wiring.....	3
2.2 Settings for Single Network Sounder.....	6
2.3 Settings for Two Network Sounders.....	12
2.4 Erasing Transducer Setting	15
3. OPERATION, MAINTENANCE	16
3.1 Controls.....	16
3.2 Additions to NavNet Series Operator’s Manual.....	17
3.3 Replacing Fuses	18
3.4 All Clear.....	19
APPENDIX1 BLT TRANSDUCERS	AP-1
APPENDIX2 TRANSDUCER 82B-35R	AP-3
SPECIFICATIONS	SP-1
PACKING LISTS	A-1
OUTLINE DRAWINGS	D-1
INTERCONNECTION DIAGRAM	S-1

SYSTEM CONFIGURATION

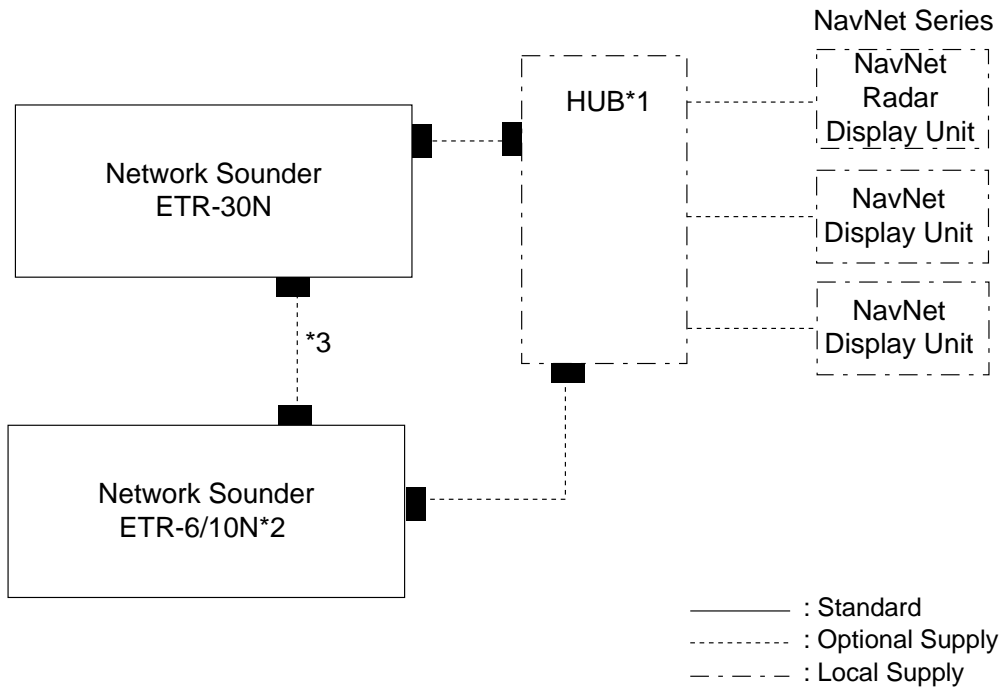
Single network sounder



* = By using a hub, one NavNet series radar and three NavNet display units may be connected.

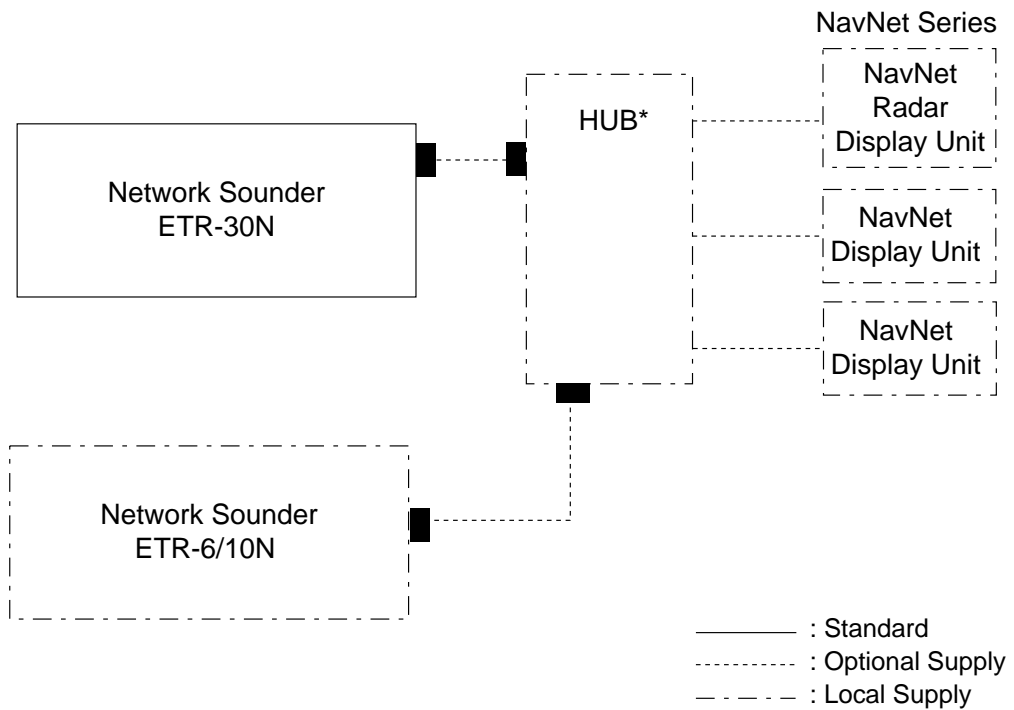
System configuration, single network sounder

Multiple network sounders



- *1 = By using a hub, one NavNet series radar and two NavNet display units may be connected.
- *2 = Maximum two network sounders may be installed.
- *3 = Connect to NET KP.

System configuration, two ETR-30N



- * = By using a hub, one NavNet series radar and two NavNet display units may be connected.

System configuration, ETR-30N + ETR-6/10N

EQUIPMENT LISTS

Standard supply

Name	Type	Code No.	Qty	Remarks
Network Sounder	ETR-30N	—	1	
Spare Parts*	SP02-04601	002-180-150	1 set	
Installation Materials*	CP02-07100 (w/NavNet connection cable)	—	1 set	<ul style="list-style-type: none"> • <u>Power Cable</u> MJ-A3SPF0013-035 • <u>NavNet connection cable</u> MJ-A6SPF0014-050 (5 m) • CP02-07101
	CP02-07110 (No NavNet connection cable)	—		<ul style="list-style-type: none"> • <u>Power Cable</u> MJ-A3SPF0013-035 • CP02-07101

* = See packing list at end of manual.

Optional supply

Name	Type	Code No.	Remarks
Piggyback Mount Kit	OP02-84	002-186-170	For mounting two network sounders piggyback style
Cable Assy.	MJ-A6SPF0014-010	000-144-421	6P-6P, 1 m, For NavNet
	MJ-A6SPF0014-050	000-144-422	6P-6P, 5 m, For NavNet
	MJ-A6SPF0014-100	000-144-423	6P-6P, 10 m, For NavNet
	MJ-A6SPF0014-200	000-144-424	6P-6P, 20 m, For NavNet
	MJ-A6SPF0014-300	000-144-425	6P-6P, 30 m, For NavNet
	MJ-A6SRMD/TM11AP8-005	000-144-463	For HUB
	NCS255AD-254P-L500	000-142-518	For connection of combination transducers
Rectifier	PR-62	000-013-484	100 VAC
		000-013-485	110 VAC
		000-013-486	220 VAC
		000-013-487	230 VAC
Transducer	See the next several pages for transducer and recommended thru-hull pipe and tank.		

Available transducers

1kW transducer

Freq. (kHz)	Ship	Transducer	Thru-hull pipe	Tank
28/50	Steel	28F-8 (000-015-003) 50B-6 (000-015-042)	—	—
	FRP	50B-6B (000-015-043, 15M) (000-015-018, 30M) (000-015-255, 40M)	—	—
	Steel	28F-8 (000-015-003) 50B-9 (000-138-574)	TWB-6000 (2) (000-015-207)	T-656 (000-015-982)
	FRP	50B-9B (000-015-065)	—	—
	Steel	28F-8 (000-015-003)	—	—
	FRP	50F-8G (000-015-066)	—	—
28/68	Steel	28F-8 (000-015-003)	—	—
	FRP	68F-8H (000-015-067)	—	—
28/88	Steel	28F-8 (000-015-003)	TWB-6000 (2) (000-015-207)	T-657 (000-015-983)
	FRP	88B-8 (000-015-024)	—	—
28/200	Steel	28F-8 (000-015-003)	—	—
	FRP	200B-5S (000-015-029)	—	—
50/88	Steel	50B-6 (000-015-042) 50B-6B (000-015-043, 15M) (000-015-018, 30M) (000-015-255, 40M)	—	—
	FRP	88B-8 (000-015-024)	—	—
	Steel	50B-9 (000-138-574) 50B-9B (000-015-065)	TWB-6000 (2) (000-015-207)	T-658 (000-015-984)
	FRP	88B-8 (000-015-024)	—	—
	Steel	50F-8G (000-015-066)	—	—
	FRP	88B-8 (000-015-024)	—	—

1kW transducer (con't)

Freq. (kHz)	Ship	Transducer	Thru-hull pipe	Tank
50/200	Steel	50B-6 (000-015-042) 50B-6B (000-015-043, 15M) (000-015-018, 30M) (000-015-255, 40M) 200B-5S (000-015-029)	—	—
	FRP		—	—
	Steel	50B-9 (000-138-574) 50B-9B (000-015-065) 200B-5S (000-015-029)	—	—
	FRP		—	—
	Steel	50F-8G (000-015-066) 200B-5S (000-015-029)	—	—
	FRP		—	—
	Steel	50/200-1T (000-015-170)	—	—
	FRP		—	—
	Steel	50/200-1ST (000-015-110)	—	—
	FRP		—	—
68/200	Steel	68F-8H (000-015-067) 200B-5S (000-015-029)	—	—
	FRP		—	—
88/200	Steel	88B-8 (000-015-024) 200B-5S (000-015-029)	—	—
	FRP		—	—

2kW transducer

Freq. (kHz)	Ship	Transducer	Thru-hull pipe	Tank
28/50	Steel	28F-18 (000-015-004, 15M) (000-138-573, 30M)	TFB-7000 (2) (000-015-209)	T-634 (000-015-810)
	FRP	50B-12 (000-015-020)	—	—
28/68	Steel	28F-18 (000-015-004, 15M) (000-138-573, 30M)	—	—
	FRP	68F-30H (000-015-073)	TRB-1100 (2) (000-015-218)	T-634-F (000-015-811)
28/88	Steel	28F-18 (000-015-004, 15M) (000-138-573, 30M)	TFB-7000 (2) (000-015-209)	T-636 (000-015-813)
	FRP	88B-10 (000-015-025)	TRB-1100 (2) (000-015-218)	T-636-F (000-015-814)
28/200	Steel	28F-18 (000-015-004, 15M) (000-138-573, 30M)	TFB-7000 (2) (000-015-209)	T-638 (000-015-818)
	FRP	200B-8 (000-015-030) 200B-8B (000-015-032) 200B-8N (000-015-045)	TRB-1100 (2) (000-015-218)	T-638-F (000-015-819)
50/88	Steel	50B-12 (000-015-020)	TFB-7000 (2) (000-015-209)	T-643 (000-015-821)
	FRP	88B-10 (000-015-025)	TRB-1100 (2) (000-015-218)	T-643-F (000-015-822)
50/200	Steel	50B-12 (000-015-020) 200B-8 (000-015-030)	TFB-7000 (2) (000-015-209)	T-645 (000-015-826)
	FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	—	—
	Steel	50BL-12 (000-015-246)	TWB-6000 (2) (000-015-207)	T-693 (000-015-044)
	FRP	200B-8B (000-015-032)	TRB-1100 (2) (000-015-218)	T-693-F (000-015-241)
68/200	Steel	68F-30H (000-015-073) 200B-8 (000-015-030)	TFB-7000 (2) (000-015-209)	T-647 (000-015-831)
	FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	TRB-1100 (2) (000-015-218)	T-647-F (000-015-832)
88/200	Steel	88B-10 (000-015-025) 200B-8 (000-015-030)	TFB-7000 (2) (000-015-209)	T-649 (000-015-833)
	FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	TRB-1100 (2) (000-015-218)	T-649-F (000-015-834)

3kW transducer

Freq. (kHz)	Ship	Transducer	Thru-hull pipe	Tank
28/45	Steel	28F-24H (000-015-075)	—	—
	FRP	45F-12H (000-015-076)	—	—
28/50	Steel	28F-24H (000-015-075)	TFB-7000 (2) (000-015-209)	T-681 (000-015-849)
	FRP	50F-24H (000-138-582)	TRB-1100 (2) (000-015-218)	T-681-F (000-015-850)
	Steel	28F-24H (000-015-075)	TWB-6000 (2) (000-015-207)	T-696 (000-015-048)
	FRP	50BL-24H (000-015-247)	TRB-1100 (2) (000-015-218)	T-696-F (000-015-244)
28/68	Steel	28F-24H (000-015-075)	—	—
	FRP	68F-30H (000-015-073)	—	—
28/88	Steel	28F-24H (000-015-075)	TFB-7000 (2) (000-015-209)	T-682 (000-015-851)
	FRP	88F-126H (000-015-068)	TRB-1100 (2) (000-015-218)	T-682-F (000-015-852)
28/150	Steel	28F-24H (000-015-075)	TFB-7000 (2) (000-015-209)	T-683 (000-015-853)
	FRP	150B-12H (000-015-074)	TRB-1100 (2) (000-015-218)	T-683-F (000-015-854)
28/200	Steel	28F-24H (000-015-075)	TFB-7000 (2) (000-015-209)	T-683 (000-015-853)
	FRP	200B-12H (000-015-069)	TRB-1100 (2) (000-015-218)	T-683-F (000-015-854)
45/88	Steel	45F-12H (000-015-076)	—	—
	FRP	88F-126H (000-015-068)	—	—
45/150	Steel	45F-12H (000-015-076)	—	—
	FRP	150B-12H (000-015-074)	—	—
45/200	Steel	45F-12H (000-015-076)	—	—
	FRP	200B-12H (000-015-069)	—	—
50/88	Steel	50F-24H (000-138-582)	TFB-7000 (2) (000-015-209)	T-682 (000-015-851)
	FRP	88F-126H (000-015-068)	TRB-1100 (2) (000-015-218)	T-682-F (000-015-852)
	Steel	50BL-24H (000-015-247)	TWB-6000 (2) (000-015-207)	T-697 (000-015-239)
	FRP	88F-126H (000-015-068)	TRB-1100 (2) (000-015-218)	T-697-F (000-015-245)

3kW transducer (con't)

Freq. (kHz)	Ship	Transducer	Thru-hull pipe	Tank
50/150	Steel	50F-24H (000-138-582)	TFB-7000 (2) (000-015-209)	T-683 (000-015-853)
	FRP	150B-12H (000-015-074)	TRB-1100 (2) (000-015-218)	T-683-F (000-015-854)
50/200	Steel	50F-24H (000-138-582)	TFB-7000 (2) (000-015-209)	T-683 (000-015-853)
	FRP	200B-12H (000-015-069)	TRB-1100 (2) (000-015-218)	T-683-F (000-015-854)
	Steel	50BL-24H (000-015-247)	TWB-6000 (2) (000-015-207)	T-695 (000-015-047)
	FRP	200B-12H (000-015-069)	TRB-1100 (2) (000-015-218)	T-695-F (000-015-243)
68/150	Steel	68F-30H (000-015-073)	TFB-7000 (2) (000-015-209)	T-646 (000-015-829)
	FRP	150B-12H (000-015-074)	TRB-1100 (2) (000-015-218)	T-646-F (000-015-830)
68/200	Steel	68F-30H (000-015-073)	TFB-7000 (2) (000-015-209)	T-646 (000-015-829)
	FRP	200B-12H (000-015-069)	TRB-1100 (2) (000-015-218)	T-646-F (000-015-830)
88/150	Steel	88F-126H (000-015-068)	—	—
	FRP	150B-12H (000-015-074)	—	—
88/200	Steel	88F-126H (000-015-068)	TFB-7000 (2) (000-015-209)	T-685 (000-015-855)
	FRP	200B-12H (000-015-069)	TRB-1100 (2) (000-015-218)	T-685-F (000-015-856)

1kW/2kW transducer

Output (W)	Freq. (kHz)	Ship	Transducer	Thru-hull pipe	Tank
1 k/2 k	28/50	Steel	28F-8 (000-015-003)	—	—
		FRP	50B-12 (000-015-020)	—	—
	28/68	Steel	28F-8 (000-015-003)	—	—
		FRP	68F-30H (000-015-073)	—	—
	28/88	Steel	28F-8 (000-015-003)	—	—
		FRP	88B-10 (000-015-025)	—	—
	28/200	Steel	28F-8 (000-015-003) 200B-8 (000-015-030)	TWB-6000 (2) (000-015-207)	T-657 (000-015-983)
		FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	—	—
	45/88	Steel	45F-3H	—	—
		FRP	88B-10 (000-015-025)	—	—
	45/200	Steel	45F-3H 200B-8 (000-015-030)	—	—
		FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	—	—
	50/88	Steel	50B-6 (000-015-042)	—	—
			50B-6B (000-015-043, 15M) (000-015-018, 30M) (000-015-255, 40M)	—	—
		FRP	88B-10 (000-015-025)	—	—
			50B-9 (000-138-574)	—	—
	50/88	Steel	50B-9B (000-015-065)	—	—
		FRP	88B-10 (000-015-025)	—	—
	50/88	Steel	50F-8G (000-015-066)	TFB-7000 (2) (000-015-209)	T-636 (000-015-813)
		FRP	88B-10 (000-015-025)	TRB-1100 (2) (000-015-218)	T-636-F (000-015-814)
50/200	Steel	50B-6 (000-015-042)	—	—	
		50B-6B (000-015-043, 15M) (000-015-018, 30M) (000-015-255, 40M)	—	—	
	FRP	200B-8 (000-015-030) 200B-8B (000-015-032) 200B-8N (000-015-045)	—	—	
		Steel	50B-9 (000-138-574) 50B-9B (000-015-065)	TWB-6000 (2) (000-015-207)	T-658 (000-015-984)
FRP	200B-8 (000-015-030) 200B-8B (000-015-032) 200B-8N (000-015-045)		—	—	

1kW/2kW transducer (con't)

Output (W)	Freq. (kHz)	Ship	Transducer	Thru-hull pipe	Tank
	50/200	Steel	50F-8G (000-015-066) 200B-8 (000-015-030)	TFB-7000 (2) (000-015-209)	T-638 (000-015-818)
		FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	TRB-1100 (2) (000-015-218)	T-638-F (000-015-819)
	68/200	Steel	68F-8H (000-015-067) 200B-8 (000-015-030)	—	—
		FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	—	—
	88/200	Steel	88B-8 (000-015-024) 200B-8 (000-015-030)	TWB-6000 (2) (000-015-207)	T-659 (000-015-985)
		FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	—	—

1kW/3kW transducer

Output (W)	Freq. (kHz)	Ship	Transducer	Thru-hull pipe	Tank
1 k/3 k	28/45	Steel	28F-8 (000-015-003)	—	—
		FRP	45F-12H (000-015-076)	—	—
	28/50	Steel	28F-8 (000-015-003)	—	—
		FRP	50F-24H (000-138-582)	—	—
	28/68	Steel	28F-8 (000-015-003)	—	—
		FRP	68F-30H (000-015-073)	—	—
	28/88	Steel	28F-8 (000-015-003)	—	—
		FRP	88F-126H (000-015-068)	—	—
	28/107	Steel	28F-8 (000-015-003)	—	—
		FRP	100B-10R (000-027-438)	—	—
	28/150	Steel	28F-8 (000-015-003)	—	—
		FRP	150B-12H (000-015-074)	—	—
	28/200	Steel	28F-8 (000-015-003)	—	—
		FRP	200B-12H (000-015-069)	—	—
	50/88	Steel	50B-6 (000-015-042)	—	—
			50B-6B (000-015-043, 15M) (000-015-018, 30M) (000-015-255, 40M)	—	—
FRP		88F-126H (000-015-068)	—	—	
Steel		50B-9B (000-015-065)	—	—	
	FRP	88F-126H (000-015-068)	—	—	

1kW/3kW transducer (con't)

Output (W)	Freq. (kHz)	Ship	Transducer	Thru-hull pipe	Tank
1 k/3 k	50/88	Steel	50F-8G (000-015-066)	—	—
		FRP	88F-126H (000-015-068)	—	—
	50/150	Steel	50B-6 (000-015-042)	—	—
			50B-6B (000-015-043, 15M) (000-015-018, 30M) (000-015-255, 40M) 150B-12H (000-015-074)	—	—
		FRP	50B-6B (000-015-043, 15M) (000-015-018, 30M) (000-015-255, 40M) 150B-12H (000-015-074)	—	—
			150B-12H (000-015-074)	—	—
		Steel	50B-9 (000-138-574)	—	—
			50B-9B (000-015-065)	—	—
	FRP	150B-12H (000-015-074)	—	—	
	50/200	Steel	50B-6 (000-015-042)	—	—
			50B-6B (000-015-043, 15M) (000-015-018, 30M) (000-015-255, 40M) 200B-12H (000-015-069)	—	—
		FRP	50B-6B (000-015-043, 15M) (000-015-018, 30M) (000-015-255, 40M) 200B-12H (000-015-069)	—	—
			200B-12H (000-015-069)	—	—
	Steel	50B-9 (000-138-574)	—	—	
		50B-9B (000-015-065)	—	—	
	FRP	200B-12H (000-015-069)	—	—	
		200B-12H (000-015-069)	—	—	
	50/200	Steel	50F-8G (000-015-066)	—	—
		FRP	200B-12H (000-015-069)	—	—
	68/107	Steel	68F-8H (000-015-067)	—	—
FRP		100B-10R (000-027-438)	—	—	
68/150	Steel	68F-8H (000-015-067)	—	—	
	FRP	150B-12H (000-015-074)	—	—	
68/200	Steel	68F-8H (000-015-067)	—	—	
	FRP	200B-12H (000-015-069)	—	—	
88/150	Steel	88B-8 (000-015-024)	—	—	
	FRP	150B-12H (000-015-074)	—	—	
50/200	Steel	50F-8G (000-015-066)	—	—	
	FRP	200B-12H (000-015-069)	—	—	
68/150	Steel	68F-8H (000-015-067)	—	—	
	FRP	150B-12H (000-015-074)	—	—	

1kW/3kW transducer (con't)

Output (W)	Freq. (kHz)	Ship	Transducer	Thru-hull pipe	Tank
1 k/3 k	68/200	Steel	68F-8H (000-015-067)	—	—
		FRP	200B-12H (000-015-069)	—	—
	88/150	Steel	88B-8 (000-015-024)	—	—
		FRP	150B-12H (000-015-074)	—	—
	88/200	Steel	88B-8 (000-015-024)	—	—
		FRP	200B-12H (000-015-069)	—	—

2kW/3kW transducer

Output (W)	Freq. (kHz)	Ship	Transducer	Thru-hull pipe	Tank
2k/3k	28/45	Steel	28F-18 (000-015-004, 15M) (000-138-573, 30M)	—	—
		FRP	45F-12H (000-015-076)	—	—
	28/50	Steel	28F-18 (000-015-004, 15M) (000-138-573, 30M)	—	—
		FRP	50F-24H (000-015-077)	—	—
	28/68	Steel	28F-18 (000-015-004, 15M) (000-138-573, 30M)	—	—
		FRP	68F-30H (000-015-073)	—	—
	28/88	Steel	28F-18 (000-015-004, 15M) (000-138-573, 30M)	—	—
		FRP	88F-126H (000-015-068)	—	—
	28/150	Steel	28F-18 (000-015-004, 15M) (000-138-573, 30M)	TFB-7000 (2) (000-015-209)	T-637 (000-015-816)
		FRP	150B-12H (000-015-074)	TRB-1100 (2) (000-015-218)	T-637-F (000-015-817)
	28/200	Steel	28F-18 (000-015-004, 15M) (000-138-573, 30M)	—	—
		FRP	200B-12H (000-015-069)	—	—
	50/88	Steel	50B-12 (000-015-020)	—	—
		FRP	88F-126H (000-015-068)	—	—
	50/150	Steel	50B-12 (000-015-020)	TFB-7000 (2) (000-015-209)	T-644 (000-015-824)
		FRP	150B-12H (000-015-074)	TRB-1100 (2) (000-015-218)	T-644-F (000-015-825)
	50/200	Steel	50B-12 (000-015-020)	—	—
		FRP	200B-12H (000-015-069)	—	—
	68/150	Steel	68F-30H (000-015-073)	—	—
		FRP	150B-12H (000-015-074)	—	—
68/200	Steel	68F-30H (000-015-073)	—	—	
	FRP	200B-12H (000-015-069)	—	—	
88/150	Steel	88B-10 (000-015-025)	—	—	
	FRP	150B-12H (000-015-074)	—	—	
88/200	Steel	88B-10 (000-015-025)	—	—	
	FRP	200B-12H (000-015-069)	—	—	

3kW/2kW transducer (con't)

Output (W)	Freq. (kHz)	Ship	Transducer	Thru-hull pipe	Tank
3k/2k	28/50	Steel	28F-24H (000-015-075)	—	—
		FRP	50B-12 (000-015-020)	—	—
	28/68	Steel	28F-24H (000-015-075)	—	—
		FRP	68F-30H (000-015-073)	—	—
	28/88	Steel	28F-24H (000-015-075)	—	—
		FRP	88B-10 (000-015-025)	—	—
	28/200	Steel	28F-24H (000-015-075) 200B-8 (000-015-030)	—	—
		FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	—	—
	45/88	Steel	45F-12H (000-015-076)	—	—
		FRP	88B-10 (000-015-025)	—	—
	45/200	Steel	45F-12H (000-015-076) 200B-8 (000-015-030)	—	—
		FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	—	—
	50/88	Steel	50F-24H (000-015-077)	—	—
		FRP	88B-10 (000-015-025)	—	—
	50/200	Steel	50F-24H (000-015-077) 200B-8 (000-015-030)	—	—
		FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	—	—
	68/200	Steel	68F-30H (000-015-073) 200B-8 (000-015-030)	TFB-7000 (2) (000-015-209)	T-647 (000-015-831)
		FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	TRB-1100 (2) (000-015-218)	T-647-F (000-015-832)
88/200	Steel	88F-126H (000-015-068) 200B-8 (000-015-030)	—	—	
	FRP	200B-8B (000-015-032) 200B-8N (000-015-045)	—	—	

1. MOUNTING

1.1 Network Sounder

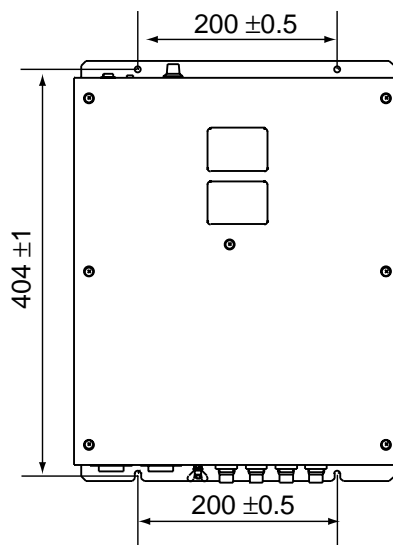
1.1.1 Mounting considerations

The network sounder can be installed on the deck or on the bulkhead. When selecting a mounting location, keep the following points in mind:

- The temperature and humidity of the mounting location should be moderate and stable.
- Locate the unit away from exhaust pipes and vents.
- The mounting location should be well ventilated.
- Do not install the equipment where it may get wet from rain or water splash.
- Mount the unit where shock and vibration are minimal.
- Keep the unit away from electromagnetic field-generating equipment such as motors and generators.
- Leave slack in cables for maintenance and servicing ease.
- For mounting on a bulkhead, be sure the mounting location is strong enough to support the weight of the unit (5.6 kg, 12.3 lbs) under the continued vibration normally experienced onboard the vessel.
- Observe the following compass safe distances to prevent disturbance to a magnetic compass: standard compass, 1.7 m, steering compass, 1.1 m.

1.1.2 Mounting procedure

Fix the network sounder to the mounting location with four tapping screws (5 × 25, supplied).



Mounting dimensions for the network sounder

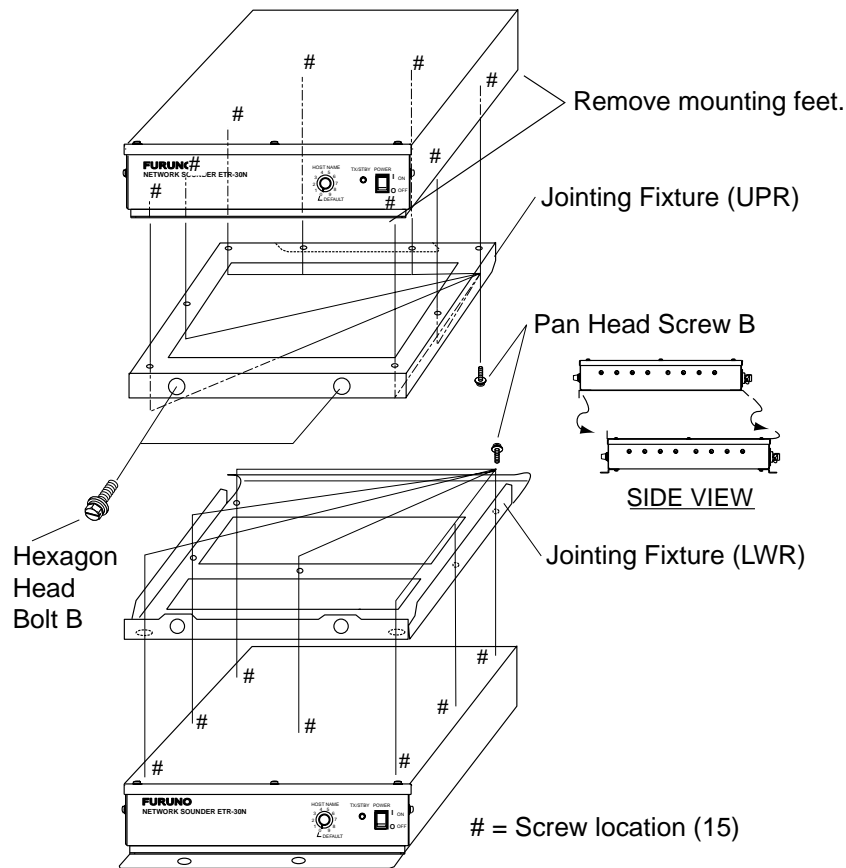
1.1.3 Stacking units

You may stack two network sounders by using the optional piggyback mount kit (Type OP02-84, Code No. 002-186-170) as below.

Note: Change the tap setting on the lower unit before installing the upper unit. See paragraph 2.2 for how to change tap setting.

Contents of piggyback mount kit

Name	Type	Code No.	Qty	Remarks
Jointing Fixture (LWR)	02-142-1131	100-300-211	1	
Jointing Fixture (UPR)	02-142-1132	100-300-221	1	
Hexagon Head Bolt B	M5 x 12	000-803-147	2	
Pan Head Screw B	M4 x 8	000-881-445	15	



How to assemble the piggyback mount kit

1.2 Transducer

The performance of this sounder is directly related to the mounting location of the transducer. When selecting a mounting location keep in mind the following points:

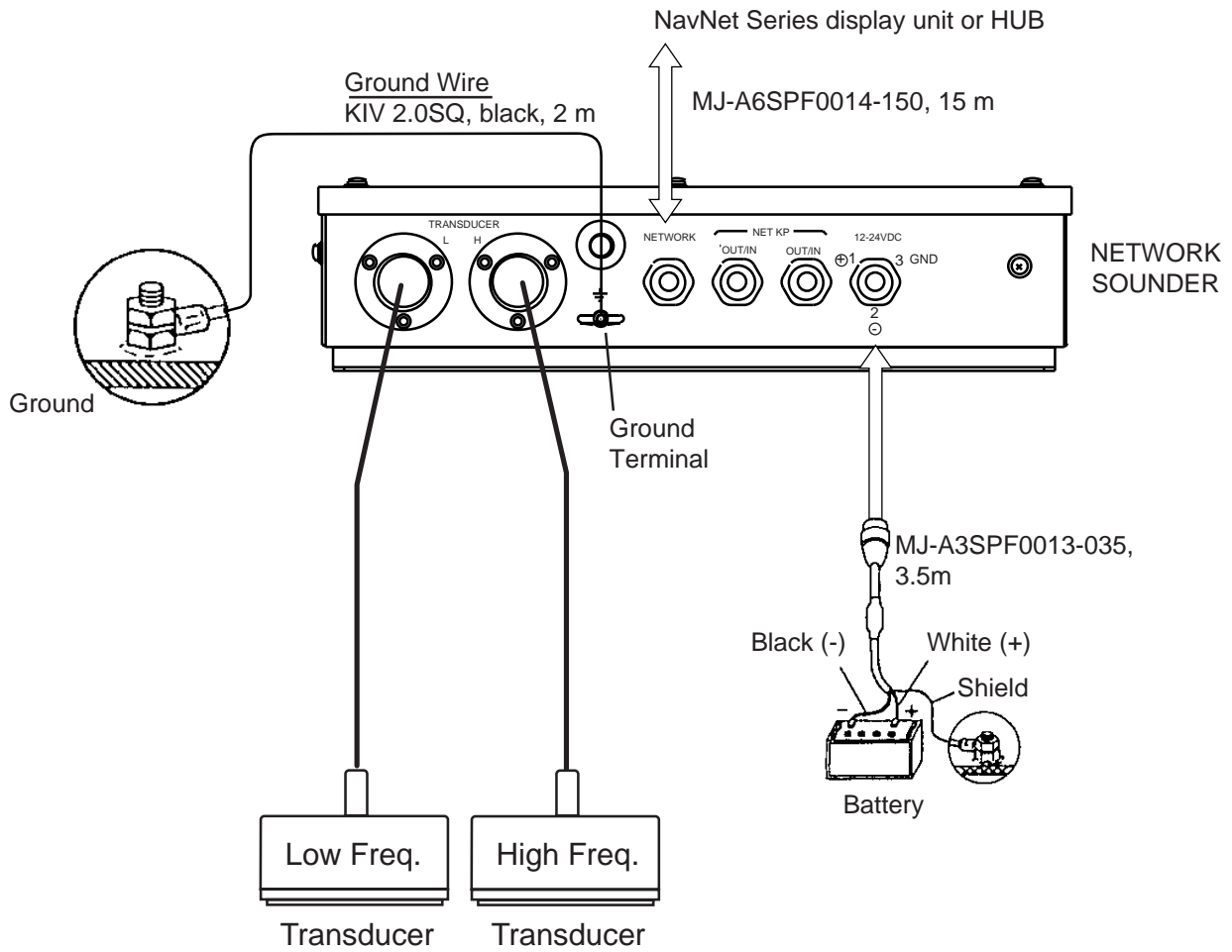
- Select a location not influenced by air bubbles and engine noise.
- As a general rule the position between 1/3 and 1/2 of ship's length from the bow is usually a good location.
- The face of the transducer must be facing the sea bottom under normal cruising conditions.

2. WIRING, SETUP

2.1 Wiring

2.1.1 Standard installation

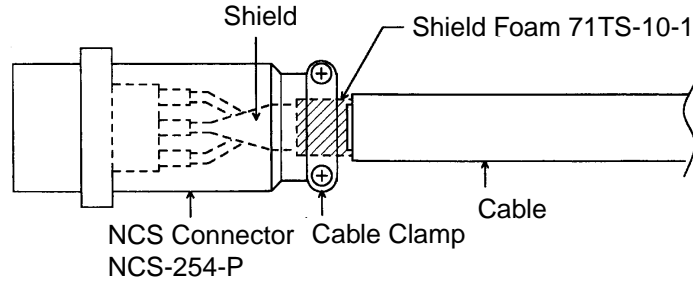
Connect NavNet series display unit or HUB, transducer, power cable and ground wire as below.



Connection of network sounder

Transducer

Route the transducer cable well away from power cables, televisions and CRTs to prevent interference to the network sounder. Attach the NCS connector to the transducer cable as below and connect it to the appropriate TRANSDUCER connector on the front of the network sounder.



How to attach connector to transducer cable

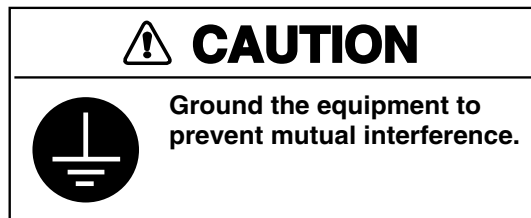
Note: For dual-frequency transducer, use the optional cable assy. NCS255AD-254P-L500.

Ground

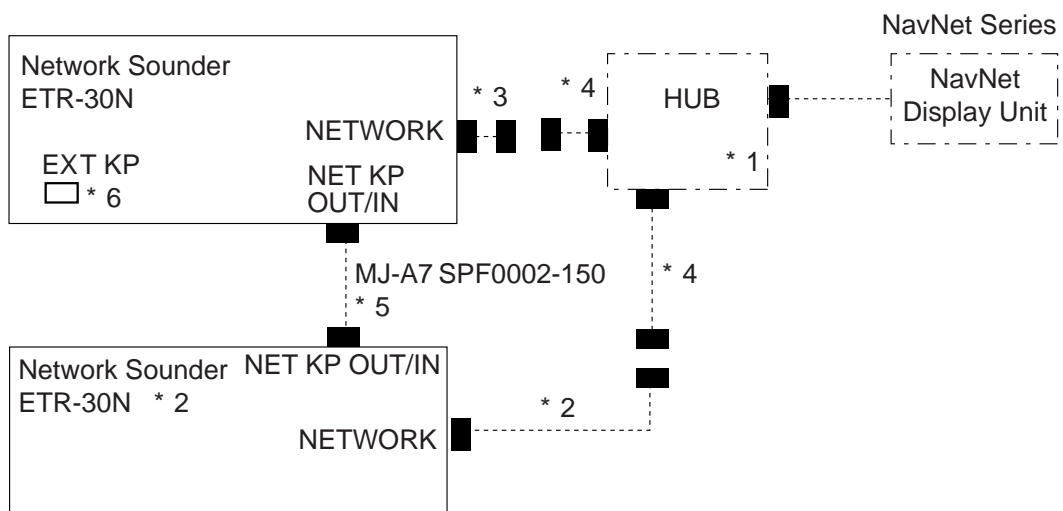
To prevent interference to the picture and radio equipment, connect a ground wire (KIV 2.0 sq, black) between the ground terminal and ship's grounding bus. The length of the wire should be as short as possible.

To obtain a good ground on an FRP vessel, a 20 × 30 cm copper plate can be welded on the outside of the ship's hull. Connect the ground wire to the copper plate.

Note: Use a "closed-type" lug (⊖) to make the connection at the network sounder. Do not use an "open-type" lug (⊖).



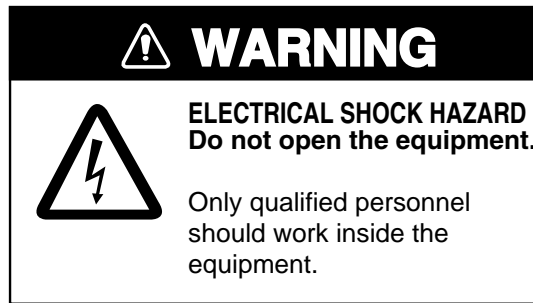
Multiple network sounders



- * 1 = By using a hub, one NavNet series radar and two NavNet display units may be connected.
- * 2 = Two ETR-30N may be connected.
- * 3 = MJ-A6SPF0014-010/050/100/200/300 (1, 5, 10, 20, 30 m)
- * 4 = MJ-A6SRMD/TM11AP8 -005
- * 5 = Connect to NET KP to get best performance.
- * 6 = If an external KP (Keying Pulse) is required, contact a FURUNO dealer.

Connection of multiple network sounders

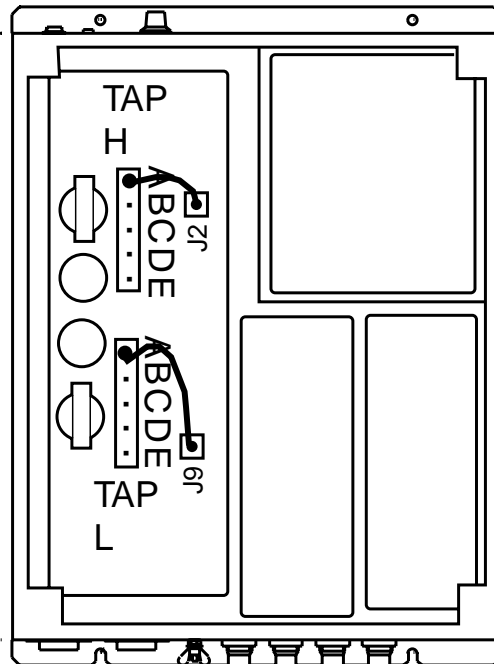
2.2 Settings for Single Network Sounder



2.2.1 Internal settings

Set the tap inside the network sounder to match transducer output power.

1. Disconnect the power cable from the network sounder.
2. Remove the cover of the network sounder.



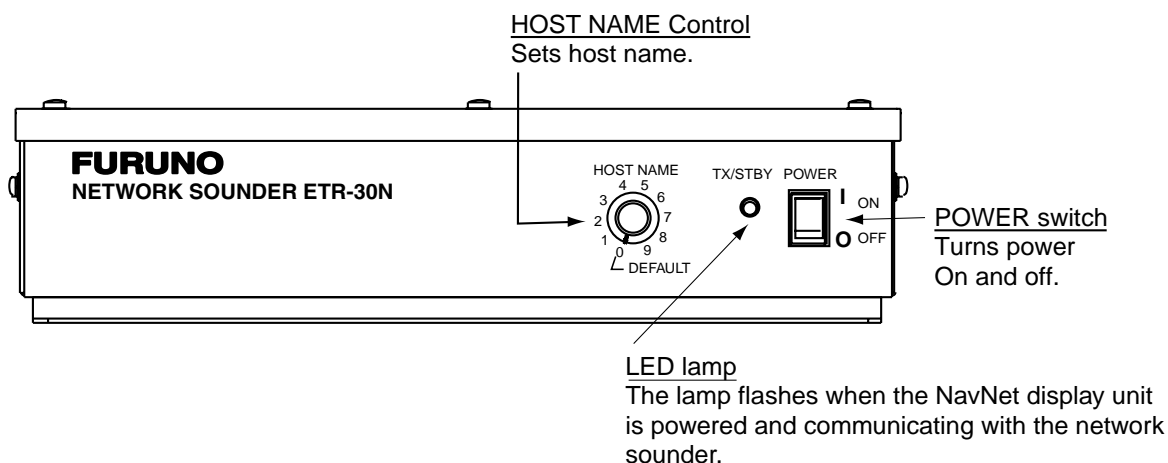
Network sounder ETR-30N, top view, cover removed

3. Using a pincers, set jumper block of TAP H (High) referring to the transducer label on the cover. Jot down the tap position. When the NavNet display unit is powered you can confirm setting (see page 10).

Note 1: The transducer model recorded on the label is in the unit's memory. Therefore, you can set transducer type following "Transducer connected to the ETR-30N is programmed in the ETR-30N" (page 9.)

Note 2: To connect other make of transducer contact your FURUNO dealer for details.

4. If a low frequency transducer is installed, set TAP L.
5. Close the cover and connect the power cable to the network sounder.
6. Confirm that the HOST NAME control is in the "0" position.

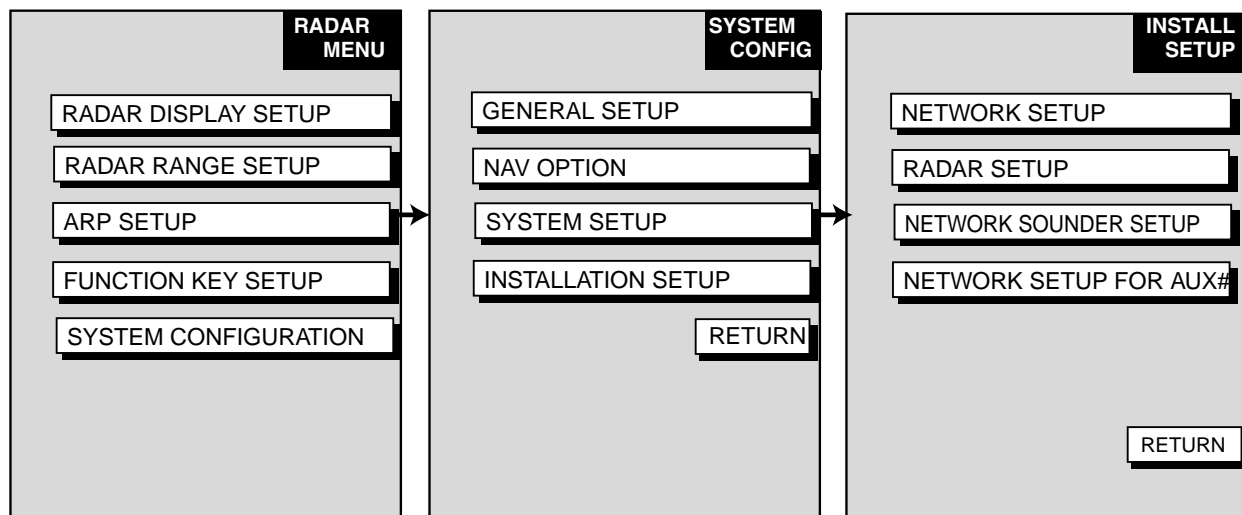


ETR-30N

7. Turn on the ETR-30N and the NavNet display unit.
8. Confirm that the LED lamp flashes.

2.2.2 Sounder source setting

1. Press the [POWER/BRILL] key on the NavNet series unit while pressing and holding down the [MENU] key. Release the [POWER/BRILL] key when you hear a beep.
2. Release the [MENU] key when the message “STARTING INSTALLATION MODE” appears.
3. After the radar screen appears, press the [MENU] key.
4. Press the SYSTEM CONFIGURATION soft key.
5. Press the INSTALLATION SETUP soft key.



Radar menu

System configuration menu

Install setup menu

=Shown on Model 1833C only

How to access the installation setup menu (example: radar NavNet unit)

Note: The very first time the system is powered you are asked if you want to start the simulation mode, which provides simulated operation of the equipment. Press the [CLEAR] key to start normal operation to set up the transducer. For further details about the simulation mode, see your NavNet series operator's manual.

```
START
SIMULATION MODE?
YES ... PUSH ENTER KNOB
NO  ... PUSH CLEAR KEY
      TO SKIP.
```

Simulation mode window

6. Press the NETWORK SETUP soft key.


▶ IP ADDRESS 172.031.092.001		NETWORK SETUP
HOST NAME	RADAR_____	
RADAR SOURCE	RADAR_____	
CHART SOURCE	_____	
SOUNDER SOURCE SOUNDER		EDIT
AUX*	WFX	
SUBNET MASK	255.255.000.000	
GATEWAY ADDRESS	000.000.000.000	
OFFSET PORT NUMBER	10000	
		RETURN

* = Model 1833C only.

Network setup menu

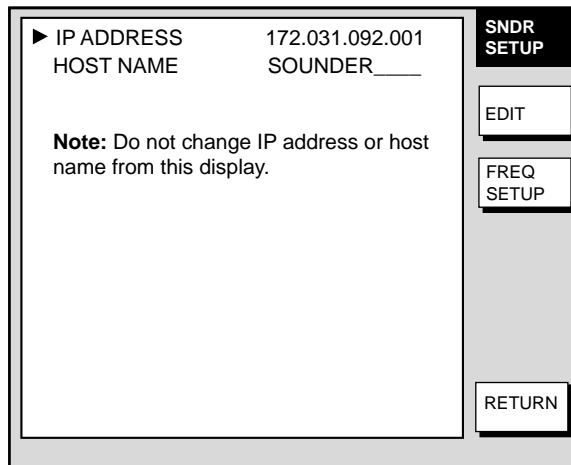
7. Confirm that the "SOUNDER SOURCE" is SOUNDER.

2.2.3 Transducer setup

 CAUTION
<p>Enter transducer setting correctly.</p> <p>A wrong transducer setting can damage the transducer.</p>

Transducer connected to the ETR-30N is programmed in the ETR-30N

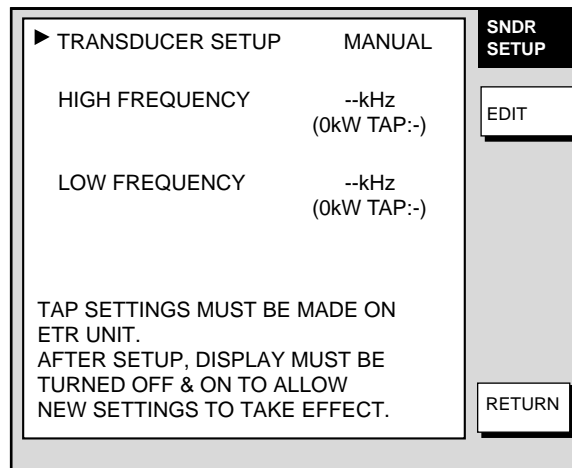
1. At the installation menu, press the NETWORK SOUNDER SETUP soft key.



Sounder setup

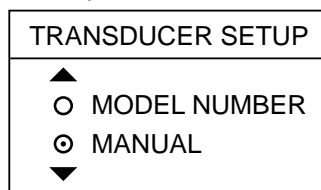
2. Press the FREQ SETUP soft key. (If the FREQ SETUP soft key is not shown, check that the ETR-30N is powered.) Confirm that sounder source (shown on the network setup menu, see page 8) and the HOST NAME control setting are the same.

HOST NAME Control Setting	Host Name
0 (Default Setting)	SOUNDER
1	SOUNDER1
2	SOUNDER2
3	SOUNDER3
4	SOUNDER4
5	SOUNDER5
6	SOUNDER6
7	SOUNDER7
8	SOUNDER8
9	SOUNDER9



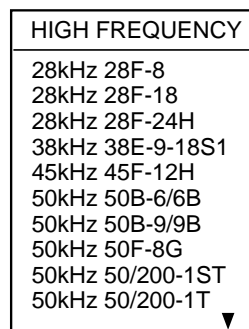
Frequency setup screen

- TRANSDUCER SETUP is selected; press the EDIT soft key.



Transducer type setting method options

- Use the [ENTER] knob to choose MODEL NUMBER and then push the [ENTER] knob.
- Use the [ENTER] knob to choose HIGH FREQUENCY and then push the [ENTER] knob.



Frequency options

- Rotate the [ENTER] knob to choose transducer and then push the [ENTER] knob.
- Confirm tap position at the SDR SETUP screen.
- If a low-frequency transducer is installed, set it following this procedure.
- Turn off the NavNet display unit.
- Turn on the NavNet display unit. Confirm that the echo sounder picture advances.

Transducer connected to the ETR-30N is not programmed in the ETR-30N

For the transducer not programmed in the ETR-30N, enter its frequency manually as below.

 CAUTION
Do not enter transducer specifications manually if the transducer is programmed in the equipment.
The transducer may become damaged.

1. Follow the procedure on page 7 to show the INSTALLATION SETUP menu.
2. Press the NETWORK SOUNDER SETUP soft key.
3. Press the FREQ SETUP soft key.
4. Press the EDIT soft key.

TRANSDUCER SETUP
▲ ○ MODEL NUMBER ⊙ MANUAL ▼

Transducer type setting options

5. Use the [ENTER] knob to select MANUAL and then push the [ENTER] knob.
6. Use the [ENTER] knob to choose HIGH FREQUENCY and then push the [ENTER] knob.

HIGH FREQUENCY
▲ 12.0kHz ▼

Frequency input screen

7. Use the [ENTER] knob to choose frequency (setting range: 25 kHz-220 kHz) and then push the [ENTER] knob. Currently, 12-24.8 kHz and 221-420 kHz cannot be set. These frequencies are for future use.
8. If a low-frequency transducer is installed, set it similarly.
9. Turn off the NavNet display unit.
10. Turn on the Navnet display unit. Confirm that the echo sounder picture advances.

2.3 Settings for Two Network Sounders

2.3.1 Two ETR-30N network sounders

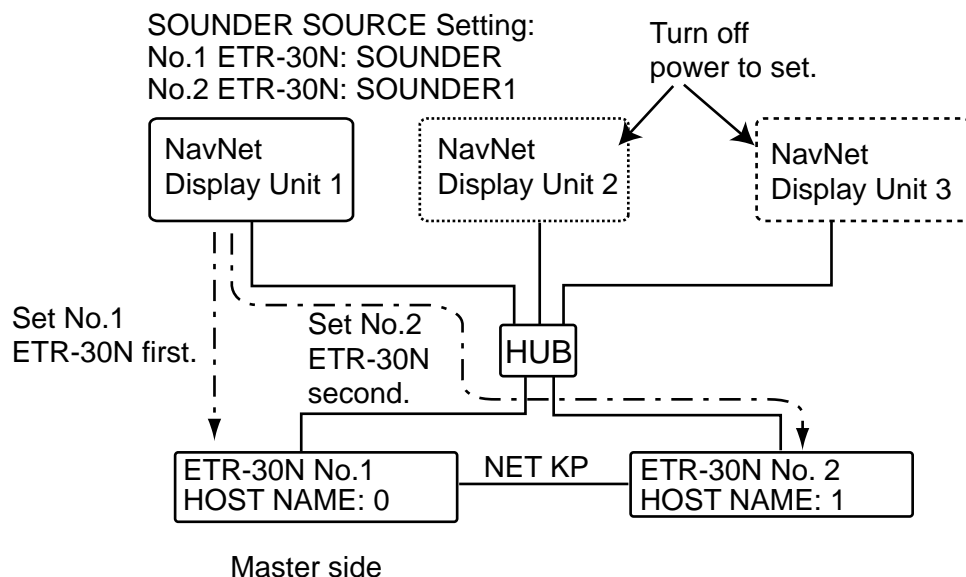
When installing two ETR-30N set the HOST NAME control to “0” for the No. 1 ETR-30N and “1” for the No. 2 ETR-30 N. Turn the ETR-30N off and on again after setting the HOST NAME control to register settings. When connecting NET KP, the ETR-30N having the lowest IP address outputs the KP and other ETR-30N receives it. The ETR-30N having high output power and low frequency should be set as the “Master” (HOST NAME control setting “0”).

1. Set tap settings of the No. 1 and No. 2 ETR-30N as in paragraph 2.2.1.
2. Following the procedure in paragraph 2.2.2, confirm that the sounder source for the No.1 ETR-30N is “SOUNDER.” (HOST NAME control is set to “0.”)
3. Set up the No. 1 ETR-30 as shown in paragraph 2.2.3.
4. Set the HOST NAME control of the No. 2 ETR-30N to “1” and then turn on the power.
5. As shown in paragraph 2.2.2, set sounder source for “SOUNDER1” on the NavNet display unit as below.
 - a) Rotate the [ENTER] knob to choose SOUNDER SOURCE.
 - b) Press the EDIT soft key.
 - c) Enter SOUNDER1 with the numeric keys.
 - d) Press the RETURN soft key.

Note: The HOST NAME control setting and sounder source name (numeric) must agree. (See the table below.) If not, the equipment cannot function.

6. Set the No. 2 ETR-30N as shown in paragraph 2.2.3.

HOST NAME control setting	SOUNDER SOURCE set on NETWORK SETUP screen of NavNet display unit
No. 1 ETR-30N: 0	SOUNDER_
No. 2 ETR-30N: 1	SOUNDER1



Connection of two ETR-30Ns

Note: The same IP address cannot be used when installing two ETR-30N or ETR-6/10N. To change IP address and host name, set a different number (1-9) for each network sounder with the HOST NAME switch on the ETR-30N. Note however that the ETR-6/10N's host name and IP address are "SOUNDER" and "172.31.92.1," respectively, and they cannot be changed.

HOST NAME control setting and resulting host name and IP address

HOST NAME Control Setting	Host Name	IP Address
0 (Default Setting)	SOUNDER	172.31.92.1
1	SOUNDER1	172.31.92.11
2	SOUNDER2	172.31.92.12
3	SOUNDER3	172.31.92.13
4	SOUNDER4	172.31.92.14
5	SOUNDER5	172.31.92.15
6	SOUNDER6	172.31.92.16
7	SOUNDER7	172.31.92.17
8	SOUNDER8	172.31.92.18
9	SOUNDER9	172.31.92.19

NET KP

If installing two ETR-30Ns, connect cable MJ-A7SPF0002-050 between NET KP OUT/IN ports to prevent interference. Maximum two ETR-30N units may be installed; however, there are two ports. One is for future use.

2.3.2 ETR-30N and ETR-6/10N

When installing an ETR-30N and an ETR-6/10N, the ETR-6/10N's host name of SOUNDER cannot be changed. For this reason, the set the HOST NAME control of the ETR-30N to "1" and its host name to "SOUNDER1." Turn the ETR-30N off and on again after setting the HOST NAME control to register settings.

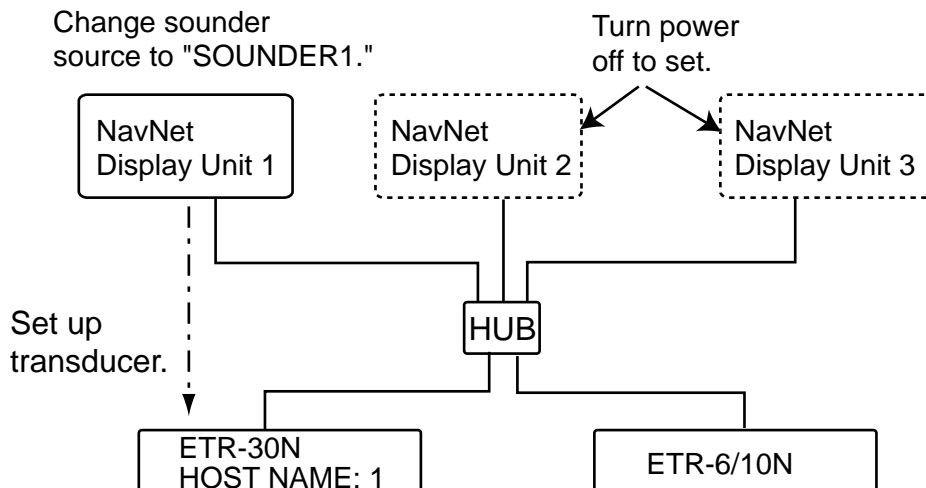
1. Set tapings of ETR-30N as in paragraph 2.2.1.
2. Set the HOST NAME control of the ETR-30N to "1" and turn on the power.
3. As shown in paragraph 2.2.2, set sounder source for "SOUNDER1" on the NavNet display unit as below.
 - a) Rotate the [ENTER] knob to choose SOUNDER SOURCE.
 - b) Press the EDIT soft key.
 - c) Enter SOUNDER1 with the numeric keys.
 - d) Press the RETURN soft key.

Note: The HOST NAME control setting and sounder source name (numeric) must agree. (See the table below.) If not, the equipment cannot function.

4. Set the ETR-30N as shown in paragraph 2.2.3.

HOST NAME control setting on ETR-30N	SOUNDER SOURCE set on NavNet display unit
1	SOUNDER1

Note: The host name and frequency on the ETR-6/10N are fixed to SOUNDER and 50/200 kHz, respectively.



Installation with ETR-30N and ETR-6/10N

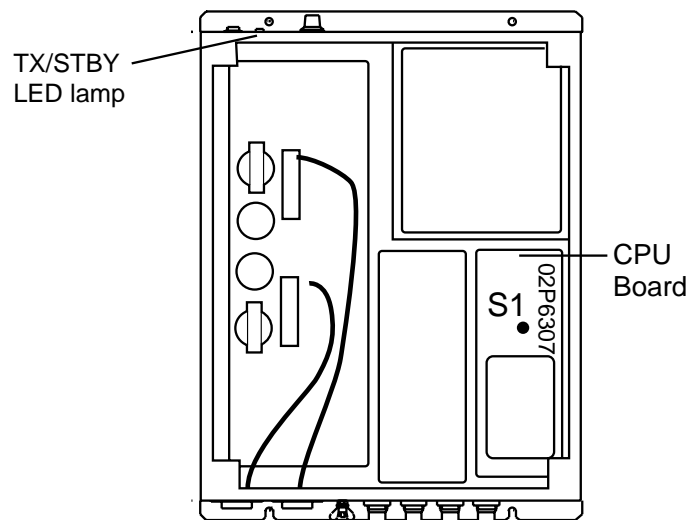
If the ETR-6/10N is generating interference, use the interference rejector on the NavNet display unit to reject it. If that does not work, contact your dealer for advice.

2.4 Erasing Transducer Setting

When changing transducer(s), erase previous transducer setting(s) as shown below and then enter new transducer settings as in paragraph 2.2. (The set cannot transmit unless transducer settings are entered.)

To erase transducer settings, do the following:

1. Turn on the power while pressing and holding down switch S1 (TDCLR) on the CPU board.
2. Release S1 when the TX/STBY LED flashes slowly.



ETR-30N, cover removed

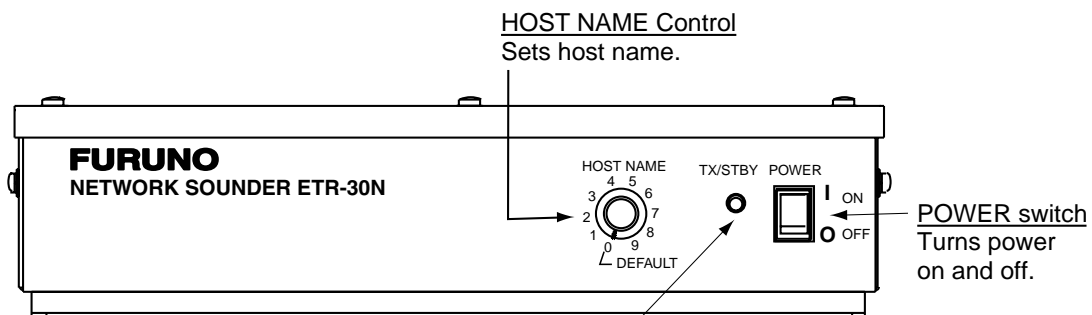
3. OPERATION, MAINTENANCE

WARNING

ELECTRICAL SHOCK HAZARD
Do not open the equipment.

Only qualified personnel should work inside the equipment.

3.1 Controls



LED lamp

Flashing:

The NavNet display unit is powered and communicating with the network sounder.

Lighting (after flashing three minutes):

The NavNet connection cable is disconnected or damaged.

Network sounder ETR-30N

3.2 Additions to NavNet Series Operator's Manual

Depending on the version number of your NavNet series operator's manual, its echo sounder descriptions may not match the screens you see. Please add the following descriptions to your manual if they are not already present.

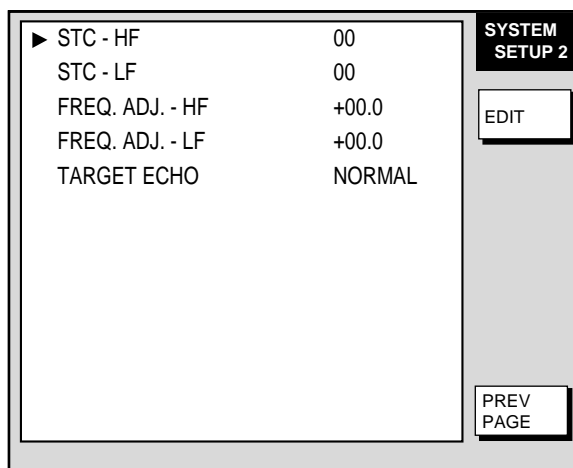
Choosing pulse repetition rate (PRR)

Pulse repetition rate can be changed to reduce second reflection echoes. Normally, the highest rate (20) is used. When in shallow waters, second reflection echoes may appear between surface and actual bottom echo. In this case lower the pulse repetition rate. If the setting is too small, it may not be possible to search fish schools effectively. Select "20" unless second reflection echoes appear on the display. The option "S" means the ship's speed dependent mode, where the PRR automatically changes with ship's speed (requires speed input).

1. Press the [MENU] key to open the menu.
2. Press the SOUNDER MENU soft key.
3. Select PRR LEVEL.
4. Press the EDIT soft key to open the setting window.
5. Use the trackball or cursor pad to select pulse repetition rate desired.
6. Press the ENTER soft key followed by the [MENU] key to close the menu.

Sounder system setup menu

Menu items for adjustment of STC and frequencies and selection of fishing objective have been added to the SOUNDER SYSTEM SETUP menu. Press the [MENU] key, choose SOUNDER SYSTEM SETUP menu and then press the NEXT PAGE soft key.



Page 2 of sounder system setup menu

STC-HF, LF

Adjusts STC level for the high and low frequencies, and is useful for suppressing surface noise. The setting range is 0-10; the higher the setting the greater the degree of suppression. Setting 10 suppresses noise up to about several meters from own ship. Turn off the STC when there is no noise on the screen, otherwise weak echoes may be missed.

FREQ. ADJ

Adjusts transmitting frequency to suppress interference when it cannot be suppressed with the interference rejector alone.

TARGET ECHO

Sets fishing objective. Choose NORMAL for general fishing; SURFACE for detecting surface fish. Pulse repetition rate for "SURFACE" is higher than "NORMAL."

Transducer frequency

The ETR-30N offers various transducer frequencies. Therefore, the descriptions "50 kHz" and "200 kHz" should read as "LF (Low Frequency)" and "HF (High Frequency)," respectively.

3.3 Replacing Fuses

The ETR-30N has two fuses to protect against overcurrent: a 5A fuse in the snap-in fuse holder in the power cable and a 7A fuse inside the network sounder. If a fuse blows, find the cause before replacing it. If it blows again after replacement, contact a FURUNO agent or dealer for advice. If the LED lamp is off and the fuse in the power cable is normal, the fuse inside the network sounder may have blown. If this occurs, contact a FURUNO agent or dealer.

NOTICE

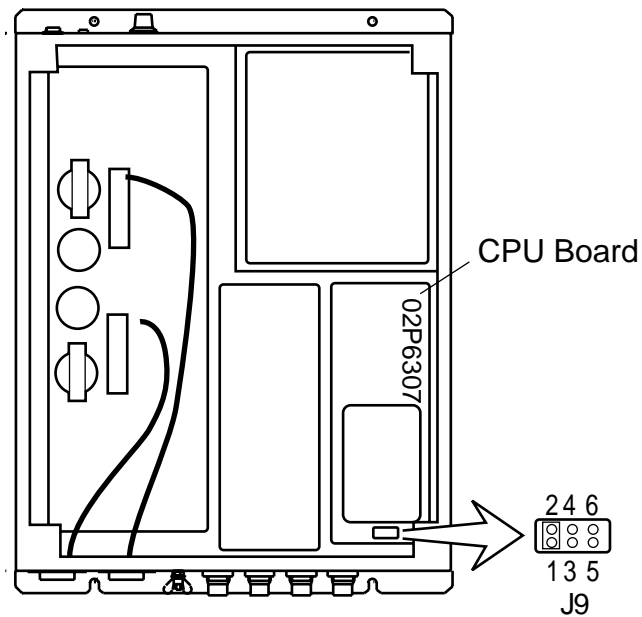
Use the correct fuse.

Use of a wrong fuse can cause serious damage to the equipment.

3.4 All Clear

When the sounder picture appears to be abnormal, execute the “all clear” function from the ETR-30N to try to restore normal operation. All clear erases all transducer settings, so reenter them referring to paragraph 2.2.

1. Turn off the ETR-30N.
2. Remove the cover.
3. Short between #5 and #6 of J9 on the CPU Board and then turn on the power.



ETR-30N, cover removed

4. After the TX/STBY LED flashes, turn off the power.

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APPENDIX1 BLT TRANSDUCERS

The BLT transducer (Bolt-clamp Langevin Transducer) has large bandwidth, good sound efficiency, compact structure and is reinforced for protection against slamming.

Transducer, thru-hull pipe and tank list

Frequency (kHz)	Transducer	Hull Material	Tank (Code No.)	Fasten inside hull (Code No.)	Fasten outside hull (Code No.)
28/200	28BL-6HR/200B-8B	Steel	T-693 (000-015-044)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-693F (000-015-241)	TRB-1100 (2) (000-015-219)	-
38/200	38BL-9HR/200B-8B	Steel	T-693 (000-015-044)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-693F (000-015-241)	TRB-1100 (2) (000-015-219)	-
50/200	50BL-12HR/200B-8B	Steel	T-693 (000-015-044)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-693F (000-015-241)	TRB-1100 (2) (000-015-219)	-
28/38	28BL-12HR/38BL-15HR	Steel	T-681 (000-015-849)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-681F (000-015-850)	TRB-1100 (2) (000-015-219)	-
28/50	28BL-12HR/50BL-24HR	Steel	T-681 (000-015-849)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-681F (000-015-850)	TRB-1100 (2) (000-015-219)	-
38/50	38BL-15HR/50BL-24HR	Steel	T-681 (000-015-849)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-681F (000-015-850)	TRB-1100 (2) (000-015-219)	-
28/88	28BL-12HR/88F-126H	Steel	T-682 (000-015-851)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-682F (000-015-852)	TRB-1100 (2) (000-015-219)	-
38/88	38BL-15HR/88F-126H	Steel	T-682 (000-015-851)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-682F (000-015-852)	TRB-1100 (2) (000-015-219)	-

50/88	50BL-24HR/88-126H	Steel	T-682 (000-015-851)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-682F (000-015-852)	TRB-1100 (2) (000-015-219)	-
28/200	28BL-12HR/200B-12H	Steel	T-683 (000-015-853)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-683F (000-015-854)	TRB-1100 (2) (000-015-219)	-
38/200	38BL-15HR/200B-12H	Steel	T-683 (000-015-853)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-683F (000-015-854)	TRB-1100 (2) (000-015-219)	-
50/200	50BL-24HR/200B-12H	Steel	T-683 (000-015-853)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-683F (000-015-854)	TRB-1100 (2) (000-015-219)	-
28/150	28BL-12HR/150B-12H	Steel	T-683 (000-015-853)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-683F (000-015-854)	TRB-1100 (2) (000-015-219)	-
38/150	38BL-15HR/150-12H	Steel	T-683 (000-015-853)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-683F (000-015-854)	TRB-1100 (2) (000-015-219)	-
38/150	50BL-24HR/156-12H	Steel	T-683 (000-015-853)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-683F (000-015-854)	TRB-1100 (2) (000-015-219)	-

Settings

- Referring page 6, set the tap as follows.

Transducer	Output	Tap
28BL-6HR	2	C
38BL-9HR		C
50BL-12HR		C
28BL-12HR	3	E
38BL-15HR		E
50BL-24HR		E

- Referring page 11, set the menu as below.

TRANSDUCER SETUP: MANUAL
FREQUENCY: 28/38/50 kHz

APPENDIX2 TRANSDUCER 82B-35R

The 82B-35R is a transducer with wide bandwidth of 65 kHz-110 kHz. It is constructed to provide protection against slamming.

Transducer, thru-hull pipe and tank list

Frequency (kHz)	Transducer	Hull Material	Tank (Code No.)	Fasten inside hull (Code No.)	Fasten outside hull (Code No.)
15/88	15F-4S/82B-35R	Steel	T-628 (000-015-921)	TWB-6000 (2) (000-015-207)	-
		FRP	T-628-F (000-015-922)	TRB-1100 (2) (000-015-218)	-
	15F-10/82B-35R	Steel	T-629 (000-015-804)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-629-F (270-601-660)	TRB-1100 (2) (000-015-218)	-
28/88	28F-18/82B-35R	Steel	T-636 (000-015-813)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-636F (000-015-814)	TRB-1100 (2) (000-015-218)	-
50/88	50F-8G/82B-35R	Steel	T-636 (000-015-813)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-636F (000-015-814)	TRB-1100 (2) (000-015-218)	-
	50B-12/82B-35R	Steel	T-643 (000-015-821)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-643F (000-015-822)	TRB-1100 (2) (000-015-218)	-
88/200	82B-35R/200B-8/200B-8B /200B-8N	Steel	T-649 (000-015-833)	TWB-6000 (2) (000-015-207)	TFB-7000 (2) (000-015-209)
		FRP	T-649F (000-015-834)	TRB-1100 (2) (000-015-218)	-

Settings

1. Referring page 6, set tap E.
2. Referring page 11, set the menu as below.

TRANSDUCER SETUP: MANUAL

FREQUENCY: 88 kHz

SPECIFICATIONS OF NETWORK SOUNDER ETR-30N

1 GENERAL

- | | | |
|-----|------------------|-------------------------------------|
| 1.1 | Transmit Method | Dual frequencies transmitting |
| 1.2 | Output Power | 1/2/3 kWrms, selectable |
| 1.3 | Frequency | 28.8-200 kHz, automatic synthesizer |
| 1.4 | Gain | 0 dB μ V, S/N 10 dB or more |
| 1.5 | Amplifier | Double super linear amplifier |
| 1.6 | Dynamic Range | 100 dB or more |
| 1.7 | Band Width | 0.2-5 kHz, variable |
| 1.8 | Network Protocol | Ethernet 10 base-T |

2 POWER SUPPLY

- | | | |
|-----|---------------------------|---|
| 2.1 | Transceiver Unit | 12-24 VDC: 2.5-1.25 A (TX), 30 VA max. |
| 2.2 | Rectifier (PR-62, option) | 100/110/115/220/230 VAC, 1 phase, 50/60Hz |

3 ENVIRONMENTAL CONDITION

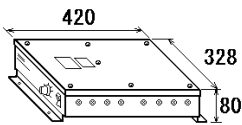
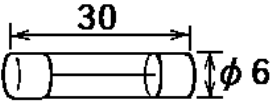
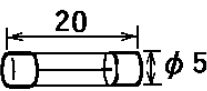
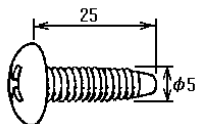
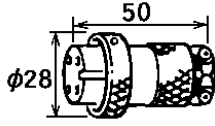
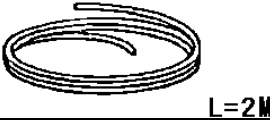
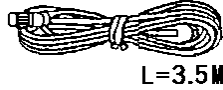
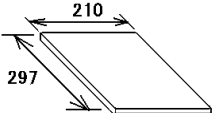
- | | | |
|-----|---------------------|----------------|
| 3.1 | Ambient Temperature | -15°C to +55°C |
| 3.2 | Relative Humidity | 95% at 40°C |
| 3.3 | Waterproof | IPX0 |
| 3.4 | Vibration | IEC 60945 |

4 COATING COLOR

2.5GY5/1.5

PACKING LIST

ETR-30N-E/J - N

NAME	OUTLINE	DESCRIPTION/CODE	Q'TY
ユニット UNIT			
魚採用送受信器 NETWORK SOUNDER		ETR-30N 002-180-070-00	1
予備品 SPARE PARTS		SP02-04601	
ヒューズ FUSE		FGBO-A 125V 5A PBF FGBO-A 5A AC125V 000-155-853-10 000-549-064-00	3
ヒューズ FUSE		FGMB 125V 7A PBF FGMB 7A 125V 000-157-493-10 000-105-868-00	3
工事材料 INSTALLATION MATERIALS		CP02-07101	
+トラスタップソネジ 1種 SELF-TAPPING SCREW		5X25 SUS304 000-802-082-00	4
コネクタ(NCS) CONNECTOR		NCS-254-P 000-506-505-10	2
ビニル線 VINYL WIRE		KIV 2.0SQ 7φ *2M* 000-554-516-00	1
その他工材 OTHER INSTALLATION MATERIALS			
ケーブル組品MJ CABLE ASSY.		MJ-A3SPF0013-035C(5A) 000-157-939-10	1
図書 DOCUMENT			
取扱説明書 OPERATOR'S MANUAL		OM*-20270-* 000-809-328-0* **	1

コード番号末尾の[**]は、選択品の代表コードを示します。

CODE NUMBER ENDING WITH "**" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.

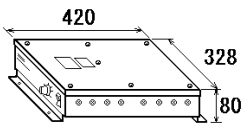
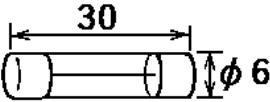
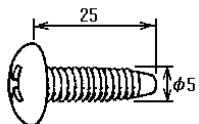
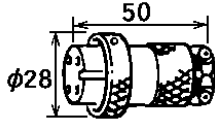
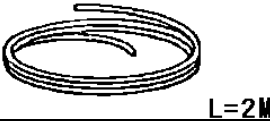
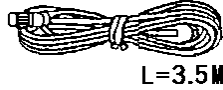
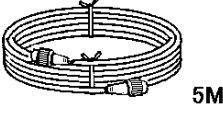
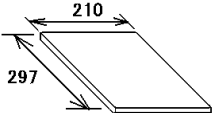
型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。なお、品質は変わりません。

TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

(略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

PACKING LIST

ETR-30N-E/J-A

NAME	OUTLINE	DESCRIPTION/CODE	Q'TY
ユニット UNIT			
魚採用送受信器 NETWORK SOUNDER		ETR-30N 002-180-070-00	1
予備品 SPARE PARTS		SP02-04601	
ヒューズ FUSE		FGBO-A 125V 5A PBF FGBO-A 5A AC125V 000-155-853-10 000-549-064-00	3
ヒューズ FUSE		FGMB 125V 7A PBF FGMB 7A 125V 000-157-493-10 000-105-868-00	3
工事材料 INSTALLATION MATERIALS		CP02-07101	
+トラスタップネジ 1種 SELF-TAPPING SCREW		5X25 SUS304 000-802-082-00	4
コネクタ(NCS) CONNECTOR		NCS-254-P 000-506-505-10	2
ビニル線 VINYL WIRE		KIV 2.0SQ 7φ *2M* 000-554-516-00	1
その他工材 OTHER INSTALLATION MATERIALS			
ケーブル組品MJ CABLE ASSY.		MJ-A3SPF0013-035C(5A) 000-157-939-10	1
ケーブル組品MJ CABLE ASSY.		MJ-A6SPF0014-050C 000-154-049-10	1
図書 DOCUMENT			
取扱説明書 OPERATOR'S MANUAL		OM*-20270-* 000-809-328-0* **	1

コード番号末尾の[**]は、選択品の代表コードを表します。

CODE NUMBER ENDING WITH "**" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.

型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。なお、品質は変わりません。

TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

(略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

5

4

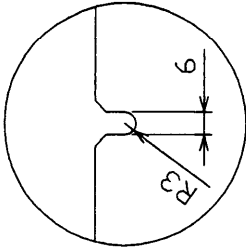
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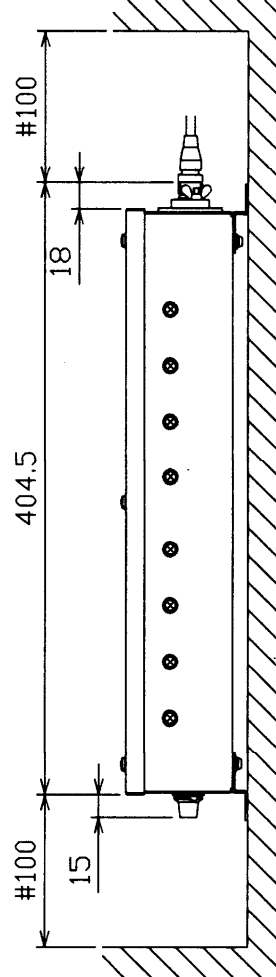
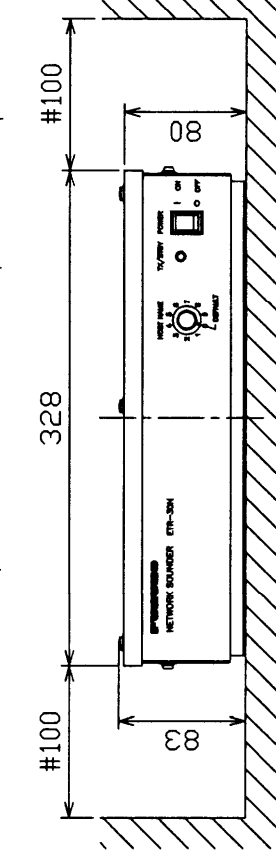
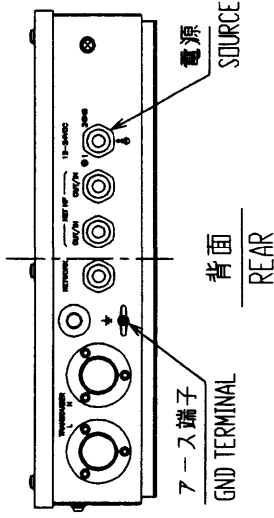
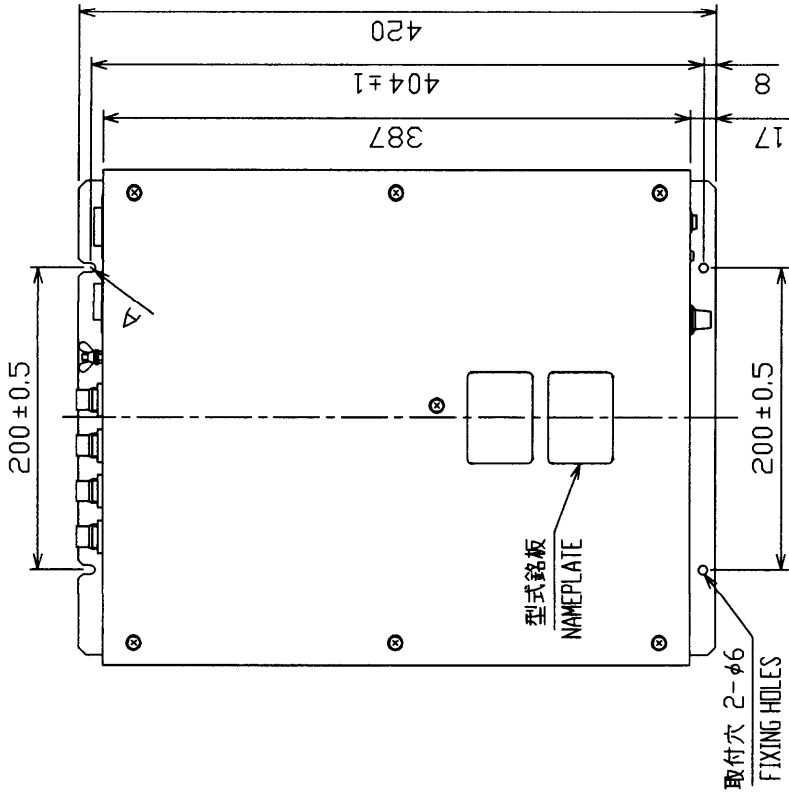
寸法区分 (m.m) DIMENSION	公差 (m.m) TOLERANCE
L ≤ 50	± 1.5
50 < L ≤ 100	± 2.5
100 < L ≤ 500	± 3

表 1 TABLE 1



A部詳細 (縮尺: 1/2)

DETAIL A (SCALE: 1/2)



- 注 記 1) #印寸法は最小サービスクリアランスとする。
 2) 指定外の寸法公差は表 1 による。
 3) 取付用ネジは+トラスチックピンネジ呼び径5 x 2.5を使用のこと。
- NOTE 1. # RECOMMENDED SERVICE CLEARANCE.
 2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
 3. USE TAPPING SCREWS 5x2.5 FOR FIXING THE UNIT.

DRAWN	June 13 02	I. YAMASAKI	TITLE	ETR-30N
CHECKED	1992/4/14	Y. K.	名称	魚探用送受信器
APPROVED	1992/4/14	Y. K.	外寸図	
SCALE	1/5	MSS 5.6 ± 10%	機種	TRANSCIVER UNIT
DWG No.	C2027-601-A	02-142-100G-0	OUTLINE DRAWING	

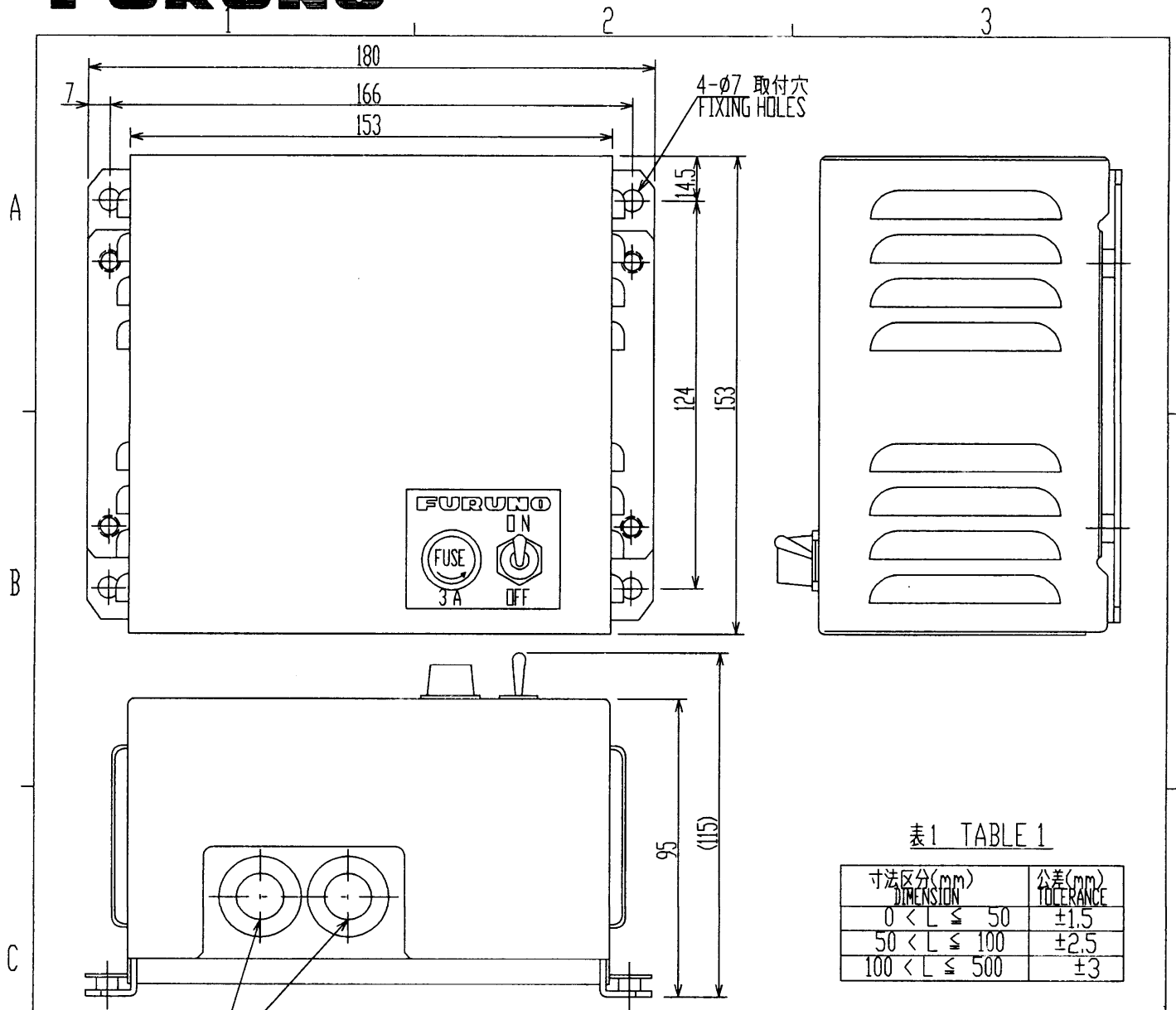
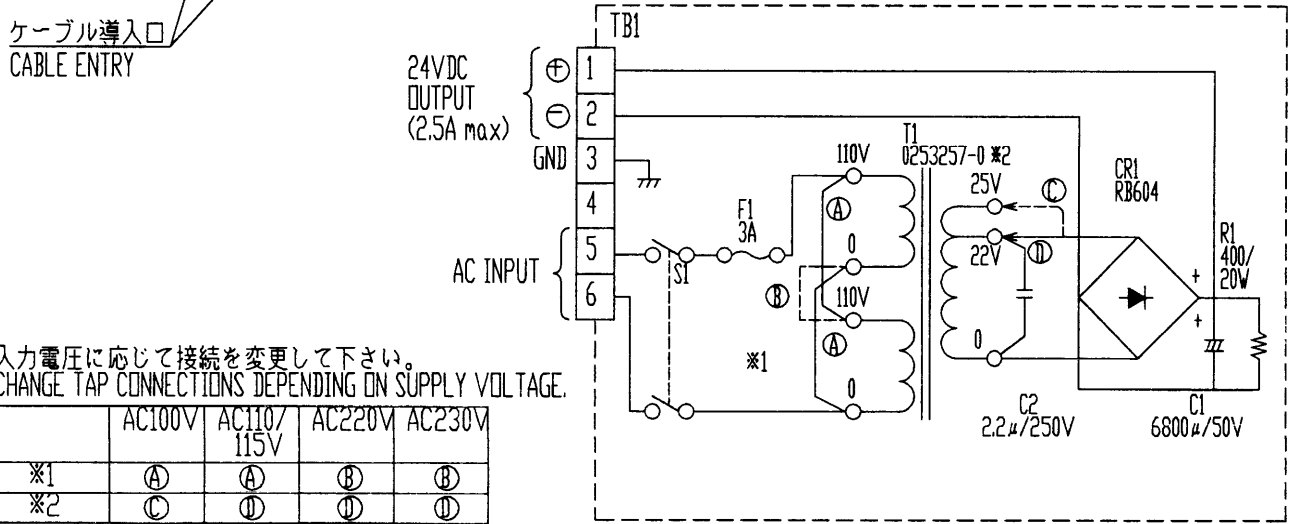


表1 TABLE 1

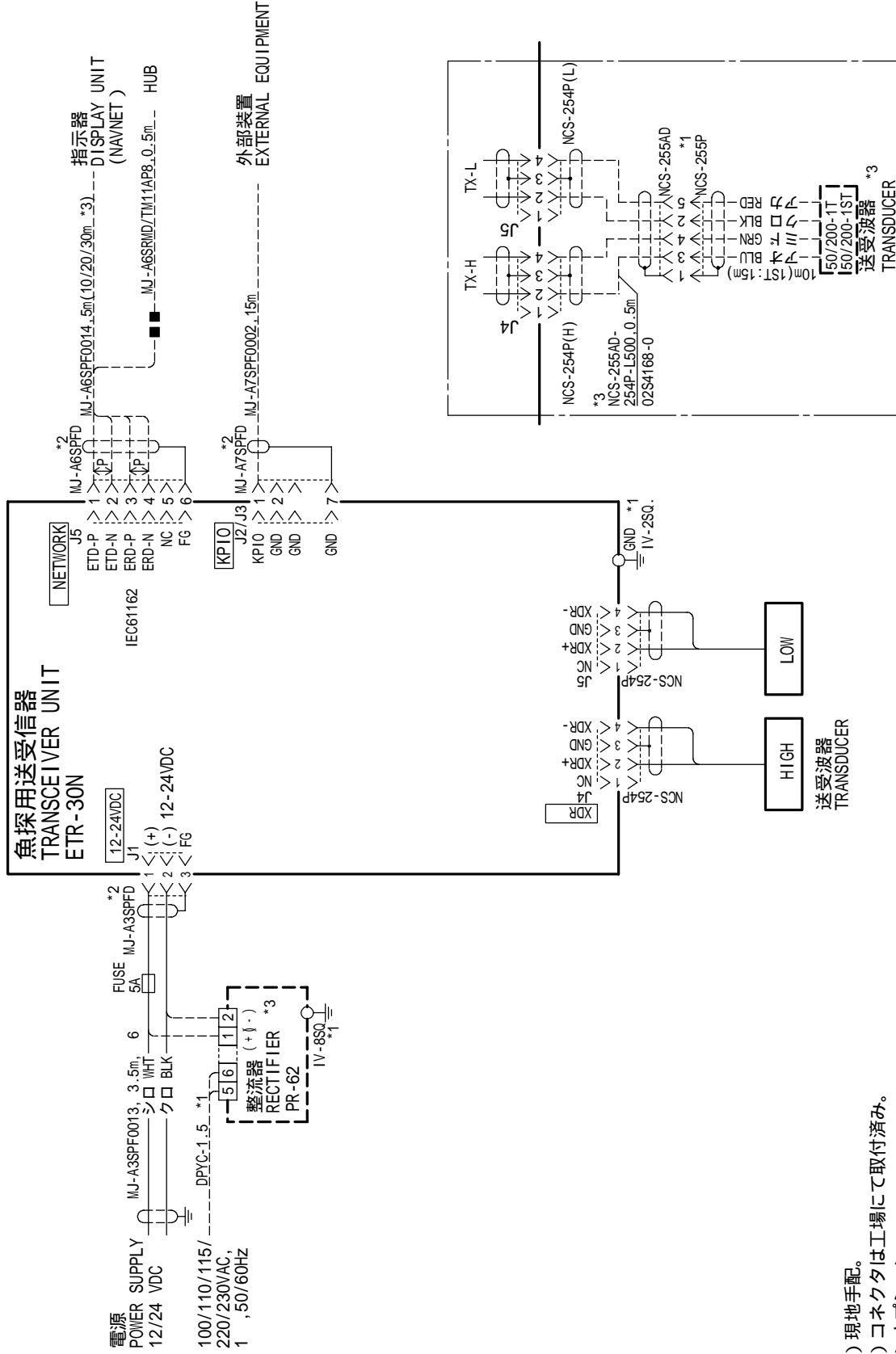
寸法区分(mm) DIMENSION	公差(mm) TOLERANCE
0 < L ≤ 50	±1.5
50 < L ≤ 100	±2.5
100 < L ≤ 500	±3



入力電圧に応じて接続を変更して下さい。
CHANGE TAP CONNECTIONS DEPENDING ON SUPPLY VOLTAGE.

	AC100V	AC110/ 115V	AC220V	AC230V
※1	Ⓐ	Ⓐ	Ⓑ	Ⓑ
※2	Ⓒ	Ⓓ	Ⓓ	Ⓓ

DRAWN Sep. 14 '01 T.YAMASAKI		TITLE PR-62
CHECKED S. Y. K. I.		名称 整流器
APPROVED S. Y. K. I.		外寸図
SCALE 1/2 MASS ±10% 3 kg		NAME RECTIFIER
DWG.No. C5003-034-E		OUTLINE DRAWING



注記

- * 1) 現地手配。
- * 2) コネクタは工場にて取付済み。
- * 3) オプション。

NOTE

- * 1. LOCAL SUPPLY.
- * 2. CONNECTOR PLUG FITTED AT FACTORY.
- * 3. OPTION.

DRAWN Nov. 25, '04 CHECKED	E. MIYOSHI TAKAHASHI, T	TITLE 名称	ETR-30N 魚探用送受信器
APPROVED	Y. Hatai	相互結線図 NAME	NETWORK SOUNDER
DWG. No.	C2027-C01-B	INTERCONNECTION DIAGRAM	A02-142-1001-0



(Elemental Chlorine Free)

The paper used in this manual
is elemental chlorine free.

© **FURUNO ELECTRIC CO., LTD.**

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FURUNO Authorized Distributor/Dealer

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(DAMI) ETR-30N

FIRST EDITION : AUG. 2002

C : AUG. 22, 2006



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